

Kcnab2 Cas9-KO Strategy

Designer:

JiaYu

Reviewer:

Xiaojing Li

Design Date:

2020-3-9

Project Overview



Project Name

Kcnab2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kcnab2* gene. The schematic diagram is as follows:



- The *Kcnab2* gene has 18 transcripts. According to the structure of *Kcnab2* gene, exon4-exon10 of *Kcnab2-208* (ENSMUST00000160884.8) transcript is recommended as the knockout region. The region contains 383bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kcnab2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data, Homozygous null mice show strain-specific changes in survival, body weight, thermoregulation and cold-swim induced tremors, impaired associative learning and memory, sporadic seizures and amygdala hyperexcitability. Mice homozygous for a knock-in mutation show no deficits in associative learning.
- The flox region contains the Gm16333 gene, which may be deleted after Cre.
- Transcript 204,209,210,212 CDS 3' incomplete, the influence is unknown.
- The *Kcnab2* gene is located on Chr4. If the knockout mice are crossed with other mouse strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Kcnab2 potassium voltage-gated channel, shaker-related subfamily, beta member 2 [Mus musculus (house mouse)]

Gene ID: 16498, updated on 19-Feb-2019

Summary



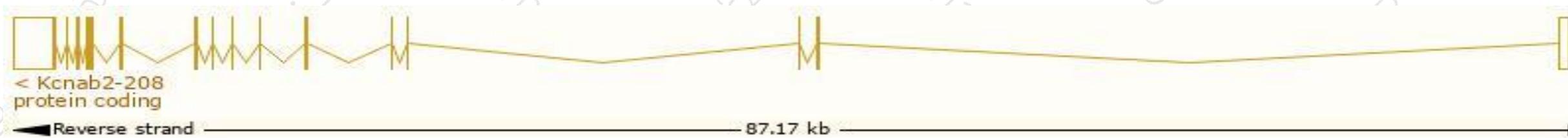
Official Symbol	Kcnab2 provided by MGI
Official Full Name	potassium voltage-gated channel, shaker-related subfamily, beta member 2 provided by MGI
Primary source	MGI:MGI:109239
See related	Ensembl:ENSMUSG00000028931
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	F5, I2rf5, Kcnb3, kv-beta-2
Expression	Biased expression in cortex adult (RPKM 40.8), frontal lobe adult (RPKM 32.0) and 9 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

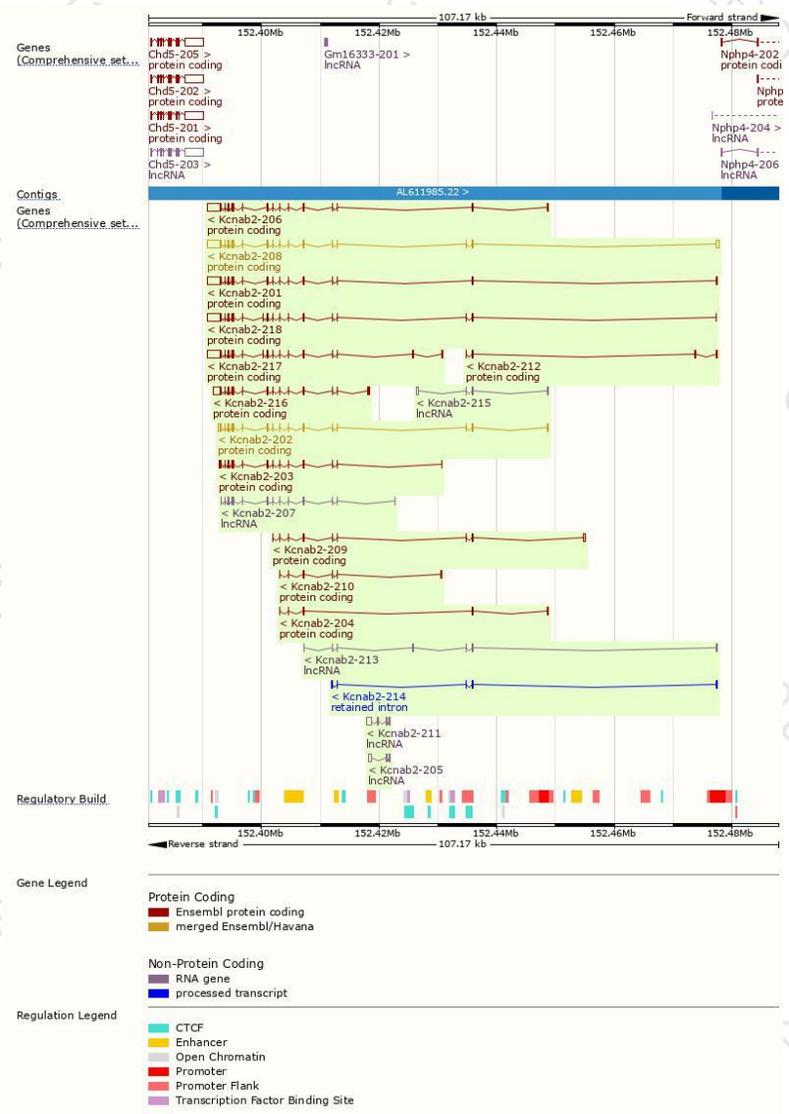
The gene has 18 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kcnab2-208	ENSMUST00000160884.8	3961	367aa	Protein coding	CCDS19000	P62482	TSL:1 GENCODE basic APPRIS P3
Kcnab2-201	ENSMUST00000030768.9	3597	353aa	Protein coding	CCDS57316	Q3UPV6	TSL:1 GENCODE basic APPRIS ALT1
Kcnab2-206	ENSMUST00000159840.7	3574	353aa	Protein coding	CCDS57316	Q3UPV6	TSL:1 GENCODE basic APPRIS ALT1
Kcnab2-202	ENSMUST00000105648.9	1799	367aa	Protein coding	CCDS19000	P62482	TSL:1 GENCODE basic APPRIS P3
Kcnab2-217	ENSMUST00000238715.1	3803	415aa	Protein coding	-	-	GENCODE basic
Kcnab2-218	ENSMUST00000238738.1	3533	382aa	Protein coding	-	-	GENCODE basic APPRIS ALT1
Kcnab2-216	ENSMUST00000238252.1	2674	398aa	Protein coding	-	-	GENCODE basic
Kcnab2-203	ENSMUST00000159186.8	1325	300aa	Protein coding	-	E0CXZ9	TSL:5 GENCODE basic
Kcnab2-209	ENSMUST00000161236.7	668	134aa	Protein coding	-	E0CXI4	CDS 3' incomplete TSL:3
Kcnab2-210	ENSMUST00000161496.8	484	56aa	Protein coding	-	-	CDS 3' incomplete TSL:5
Kcnab2-212	ENSMUST00000162017.2	406	38aa	Protein coding	-	E0CYS2	CDS 3' incomplete TSL:5
Kcnab2-204	ENSMUST00000159435.7	365	51aa	Protein coding	-	-	CDS 3' incomplete TSL:3
Kcnab2-214	ENSMUST00000162200.7	543	No protein	Retained intron	-	-	TSL:2
Kcnab2-211	ENSMUST00000161844.2	1332	No protein	lncRNA	-	-	TSL:3
Kcnab2-207	ENSMUST00000159844.8	1004	No protein	lncRNA	-	-	TSL:5
Kcnab2-205	ENSMUST00000159488.1	694	No protein	lncRNA	-	-	TSL:3
Kcnab2-213	ENSMUST00000162165.2	638	No protein	lncRNA	-	-	TSL:3
Kcnab2-215	ENSMUST00000162518.1	491	No protein	lncRNA	-	-	TSL:3

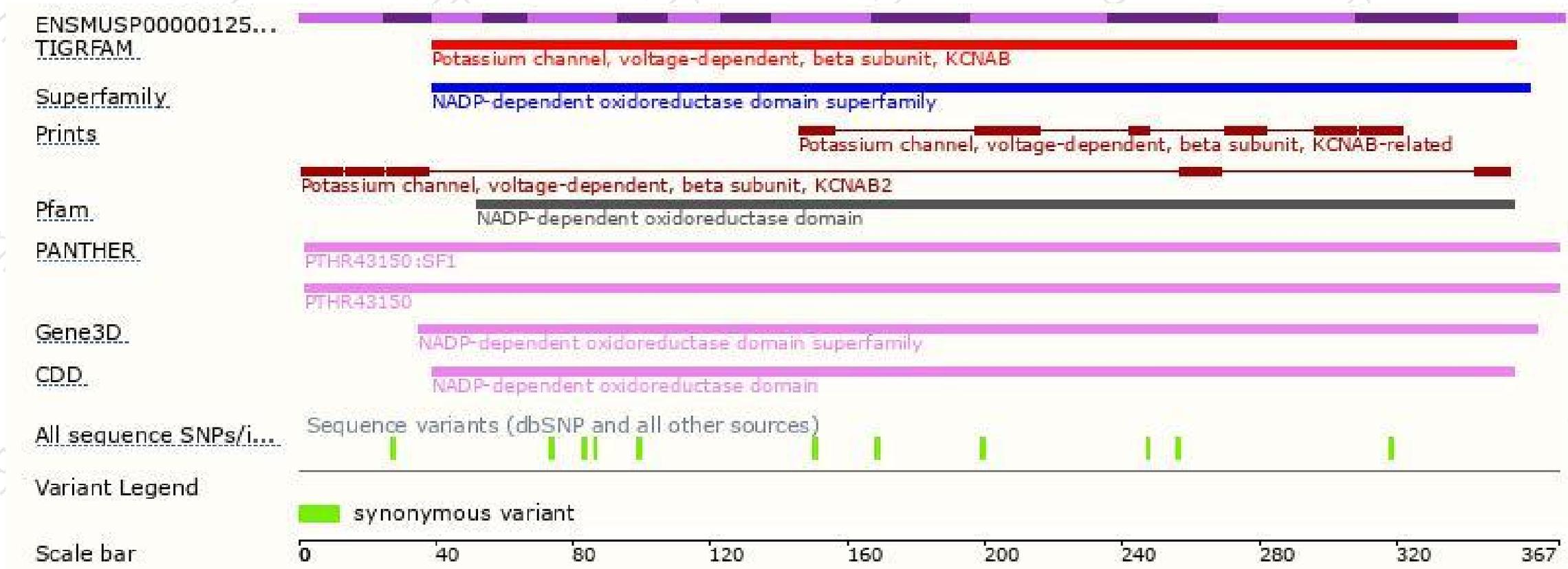
The strategy is based on the design of *Kcnab2-208* transcript, The transcription is shown below



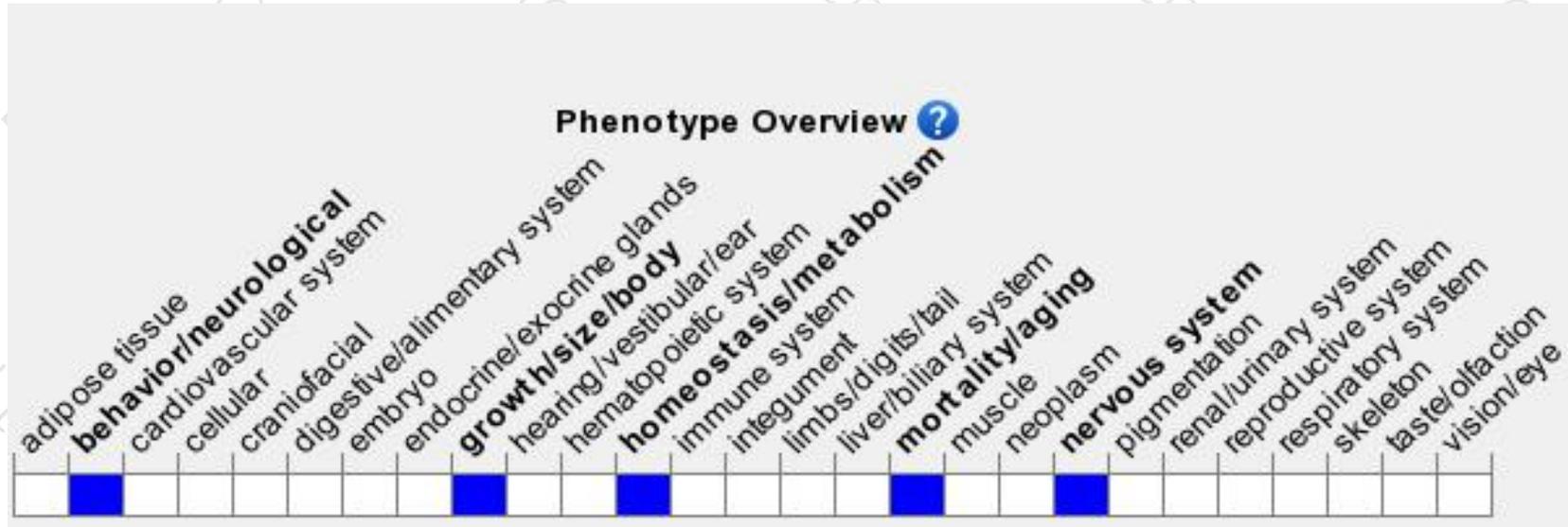
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, Homozygous null mice show strain-specific changes in survival, body weight, thermoregulation and cold-swim induced tremors, impaired associative learning and memory, sporadic seizures and amygdala hyperexcitability. Mice homozygous for a knock-in mutation show no deficits in associative learning.

If you have any questions, you are welcome to inquire.

Tel: 400-9660890

